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On Networking
The Analysis of Selected Aspects

Abstract

In the information society, the existing traditional ways of communication are changing, often in favour of digital forms. What is also transformed are the forms of teaching and educating, which are substituted by distance education with the use of networks of various types. The study focuses on the theoretical and practical determinants of network functioning. In this study, some e-challenges are analysed in the context of new prospects of the informational-educational space based on the global network of Internet. The definitions are presented as well as some exemplary types of network. Moreover, the collaboration and self-training network, and its aims are focused on. Two cases are provided as examples – the Internet platform "Doskonalenie w sieci /Improvement in the Net/" and the international research network IRNet, in the activity of which the authors of the presented article take active part.

K e y w o r d s: education, networks, teaching, ICT

Introduction

In the contemporary world, it is more and more difficult to imagine the daily functioning without such appliances as a computer and its varieties, such as a tablet or a smartphone. Moreover, possessing such equipment is definitely not enough without a permanent Internet connection. The growing accessibility

to the World Wide Web results in being online everywhere and at any time. The ongoing miniaturization of the computer (as understood so far) enhances mobility, while the personalization of appliances practically makes people hardly ever separate from them. The amount of such equipment and the omnipresence of information technologies bring about new social phenomena, such as information and communication overload (Żebrok, 2014, p. 124), information intoxication, or digital exclusion. What is emphasized with growing frequency is the phenomenon of alienation of people who do not join the information current. New disciplines have emerged of scientific exploration as well as some new notions – such as ecology of information (Eryomin, 2015).

Over the last years, the traditional forms of educating, training, acquiring knowledge and qualifications have changed rapidly into the distance education mode with the use of computer networks and the Internet. The characteristic feature of such education is shifting the main burden of educating from the teacher to the learner. In contrast to traditional methods, there is no need for direct contact between the master and the disciple. The latter perfects his/her skills in a convenient form, time and space by accessing the resources of the Net or those stored in different data storage devices (Smyrnova-Trybulska, 2013). Due to their significance, topicality and popularity, the issues of e-learning are paid more and more attention. A lot of research is done and many scientific conferences are organized (www.dlcc.us.edu.pl).

The article is aimed at analysing the theoretical and practical determinants of network functioning as well as at presenting the information on the activities of teachers' collaboration and self-training network and on the international research network IRNet.

The presented text consists of several parts. The first one is devoted to the analysis of the theoretical determinants of network functioning in the contemporary society. The starting point was an attempt at situating education in the information society. Then, the essence of the network and networking is focused on and an overview of some frequently used networks is presented.

The next part consists of a report from the activity of the pilot project entitled "Sieci współpracy i samokształcenia w powiecie cieszyńskim /*Collaboration and self-training networks in Cieszyn County*/" as well as of the presentation of some studies on the functioning of selected teachers' networks.

The final part presents the activity of the international research network IRNet.

Education in the Information Society

For centuries, time and space have been the main hindrances for information exchange. By increasing the access to extensive information resources, new media have changed this radically and enabled communication on a global scale. Among other things, the information society (IS) is being created in this way. What is most frequently indicated among the features of such a society is the wide access to the Internet as well as the compatibility of computer systems, the software and communication services. One of the major qualities of IS is the stress on personalized appliances, interactivity, networking and the unceasing search for new technological solutions, which often have no sense from the financial or rational standpoint (Castells, 2008, p. 23).

M. Castells describes the information society in the following way:

- information constitutes its main raw material;
- technologies affect information, not the other way round;
- new technologies are omnipresent and they have intensive influence on the society:
- network logic – a set of relations in which new information technologies are applied – comes into being;
- flexibility of structures occurs, which enables the change, modification and reconstruction of network elements;
- organizational change and fluctuation are ongoing; and
- technologies merge into one highly integrated system (Castells, 2008, pp. 79–80).

However, J. Morbitzer claims that due to the increasing significance of well-educated specialists in modern societies, the term "information society" is more and more often used interchangeably with the notion "knowledge society". Yet, it should be remembered that information cannot be identified with knowledge (Morbitzer, http://www.wsp.krakow.pl/konspekt/konspekt8/morbitzer8.html).

The significance of these issues was already highlighted in 1996 by the National Council for Radio and Television Broadcasting in the assumptions of the state politics: "The countries which will enter the era of information society will collect the biggest harvest. They will indicate the way for the others. However, the countries which will linger or will undertake half-hearted activities might – over a period shorter than a decade – face investment breakdown and a crisis on the labour market" (The National Council for Radio and Television).

The system of education is subject to constant changes and this process most frequently involves the application of ICT tools. This is highlighted by E. Smyrnova-Trybulska, the co-author of this article (Smyrnova-Trybulska, 2013), who emphasizes the significance of new technologies in the functioning of a society. This phenomenon substantially affects education, pointing at the need

of preparing the young generation for the use of new media, tools and methods associated with information and communication technologies. Such a situation necessitates not only the change of teaching contents and introduction of new methods and forms of learning but also some organizational changes, consisting in the introduction of modern technological solutions to all school classes (Smyrnova-Trybulska, 2013b).

Educational institutions make a lot of effort to search for modern teaching methods. They are meant to fulfil the civilization requirements of the contemporary world and to prepare the members of school communities for life in the information society. Teachers are a group of professionals who need constant training. What becomes a huge challenge for them is keeping up with the changing surroundings. The enormous growth of knowledge triggers off the need for permanent education, for "being on time." This concerns the factual knowledge, broadly understood information competencies, the skill of acquiring information and, which seems most important, the ability to get all this across. The dynamic development of ICT necessitates teachers' constant increasing their qualifications and acquiring new competencies – therefore, a lot of them have completed university education in several disciplines, including the certified qualifications in the use of new technologies. In fact, the skill of using information technologies is a requirement in any promotion procedure.

In contemporary school, a computer with Internet access is not a wonder any longer. Each member of the school community (teachers, learners, administration staff) also uses the telephone. This brings about new problems and challenges as these appliances are not used only for communication any more but have become multifunctional tools for taking photographs, recording the sound and vision, with a multitude of applications and usually with Wi-Fi access. The need has emerged to provide regulations, specify the principles of using such equipment, and take care for the safety of learners and teachers. Schools face new challenges – data protection, anti-virus protection and protection against hackers' attacks. However, the majority of teachers stress that there is no withdrawal from such a model of functioning of the contemporary world.

What poses a problem is such a preparation of teachers for the new reality so that they could constantly precede learners, not only could just "understand what their learners are talking about." All this makes teachers appropriately prepared for new challenges, including the changing form of education and training. This draws attention of the co-author of this article E. Smyrnova-Trybulska, who analyses and comments on the indispensability of a system approach to preparing teachers in the field of ICT (Smyrnova-Trybulska, 2013b, pp. 168–180).

What Are Nets? Some Theoretical Issues

According to The Great Internet Dictionary of Polish, a net is:

- …all the activities or relationships aimed at catching someone or taking control over someone, or
- the worldwide information system which consists of interconnected computers …(The Great Dictionary of Polish).

The Oxford Dictionaries contain several definitions of network and some sample sentences (http://www.oxforddictionaries.com/definition/english/network):

1. An arrangement of intersecting horizontal and vertical lines: a spider constructs a complex network of several different kinds of threads
2. A group or system of interconnected people or things: 'the company has a network of 326 branches', 'a trade network'
   2.1. A complex system of railways, roads, or other routes: the railway network
   2.2. A group of people who exchange information and contacts for professional or social purposes: a support network
   2.3. A group of broadcasting stations that connect for the simultaneous broadcast of a programme: [as modifier]: network television
   2.4. A number of interconnected computers, machines, or operations: a computer network
   2.5. A system of connected electrical conductors.

As a verb:

1. [with object] Connect as or operate with a network: compared with the railways the canals were less effectively networked
   1.1. British Broadcast (a programme) on a network: the Spurs match which ITV had networked
   1.2. Link (computers or other machines) to operate interactively: more and more PCs are networked together, (as adjective networked) networked workstations
2. [no object] (often as noun networking) Interact with others to exchange information and develop professional or social contacts: the skills of networking, bargaining, and negotiation.

Networking is a phenomenon which gets into social focus with growing frequency. What seems to increase fast is the number of political, economic or educational activities, institutions and associations in the network form (Żmijski, as cited in Elsner, 2013, p. 29). This phenomenon consists in linking people in a more or less formal way and it results from the theory that a group can do more (synergy is often mentioned). These effects are achieved by the application of modern forms of media and the choice of appropriate information and communication technologies. Networking requires a lot of self-awareness and clearly specified aims and strategies but the effort associated with network organization pays back

– it is possible to fulfil many tasks together, which cannot be done by individual resources.

Networking is an activity which allows for establishing contacts, exchanging views, accessing information and for cooperation bringing about the expected results. It enables the process of achieving the desired results together in a long-term, systematic way, based on trust and mutuality. The network has a flat organizational structure based on the principles of self-regulation and self-organization. There is no typical head management and the interpersonal relations are based on the principle of partnership. There is no hierarchy typical of educational institutions either (Elsner, 2013, p. 49).

Among its characteristics, education through the Internet has such features as shifting the burden onto learners and self-improvement on one's own. These solutions seem irreversible as in the modern world the expected effects are achieved through team work, frequently with people of different nationalities, professions and cultures, and solving complicated problems is possible only owing to well-organized group work (Żebrok, 2014, p. 115). It should be remembered that organizing within the network should be a grassroots initiative. What is worth quoting here is a definition of learning communities (*Professional Learning Communities – PLC*): "PLCs create networks to perform what their name suggests – learning from practice. PLCs meet regularly and the meetings are dedicated to the learners' work and their process of learning" (DuFour, 2004, pp. 6–11).

The strategy for supporting supra-national collaboration within the European Social Fund at the level of the European Commission is manifested e.g. by encouraging and enabling the creation of a network of collaboration, mutual learning and exchange of experiences among the EU countries in the framework of the so-called Learning Networks. They are grassroots initiatives of the member states, which are active in some particular areas and within which the participants have the possibility of exchanging experiences, good practices and of joint work on the solutions to some problems. Some psychological, pedagogical and organizational aspects of communication in a virtual team are analysed by Smyrnova-Trybulska and other authors (Smyrnova-Trybulska, 2009; Morze, Varchenko, Smyrnova-Trybulska, 2015; Issa, Isaias, Kommers, 2016).

The majority of people in the contemporary world are interrelated in net structures – they consciously join different types of networks (Nasza Klasa /Our Class/ and Facebook are just two recent examples). This type of logic can be seen in the initiatives of the Ministry of National Education, which has suggested some new solutions for teacher training.

The fact that societies are organized more and more around the network draws attention of M. Castells: "Networks constitute the new social morphology of our societies and the spreading logic of networking substantially changes the functioning and results in the processes of production, experience, authority and culture" (Castells, 2008, p. 467).

Some examples of notions referring to the metaphor of the net and networking are presented in Figure 1, whereas the classification is exemplified by the distinction into economic, virtual and social networks, which is provided below.

Economic (business) networks are composed of a set of relations between the participants of the economic game. The actors are: an entrepreneur/a firm, an industrial company, an organization, the state government, a supra-national institution. The collective actors are industrial areas or regions and the types of relations between actors are competition, collaboration, control.

Virtual networks consist of different firms. Each of them enters some particular interactions with other partners on the market. All have a certain group of clients and a relatively small infrastructural base. The virtual organization is a temporary net of independent enterprises, linking key competencies, making use of market bargains, applying information and communication technology.

Social networks constitute a group of social individuals called actors and the relations between them. An actor can participate as a person, group of people, organization, subsidiary of a firm. An association is a set of relations which link two actors. Social networks can be divided into the networks concerning the interior of a firm and those concerning external relations. Social Network Analysis (SNA) is aimed at illustrating and analysing social networks on the basis of the data defined by the user.

A network is a system enabling contacts, the exchange of views, access to information, and cooperation, which altogether with facilitate achieving the desired results in a long-term, systematic way based on trust and mutuality. A network is the space where participants can be provided with factual and methodological support as well as the knowledge adjusted to their needs. One of the principles followed by network participants says that if one wants to get something from the net *one has to give something to this net.* Among other things, collaboration networks assume voluntariness of participation, loose associations, maintaining mutual relations, economic and legal independence of the members. What constitutes the foundations of the members' activity are the contracts and agreements between the subjects. Network contacts are based on cooperation and have no geographical limitations (Elsner, 2013).

The characteristic features of education through the Internet are: shifting the burden onto learners and self-training. Yet, networking, the organizing within the network, should be a grassroots initiative.

It seems worth to quote here the definition of Professional Learning Communities (PLC): "Professional Learning Communities form networks in order to perform what their name suggests – learning through practice. PLCs meet regularly and their meetings are dedicated to learners' work and their process of learning" (http://apn.mscdn.pl/index.php?option=com_content&view=article&id=70&Itemid=104).

Most of the people in the contemporary world are linked within network structures and consciously join networks of different types. One of major classifications of business networks is the one suggested by S. Łobejko: *strategic, regional, operational networks* (Łobejko, 2010, p. 33). Another classification distinguishes *economic, virtual* and *social networks*. These are social networks which have become particularly popular over the last years (*Nasza Klasa* or *Facebook*). There are many more, for instance: *Instagram, Twitter, VKontakte, Odnoklassniki.*

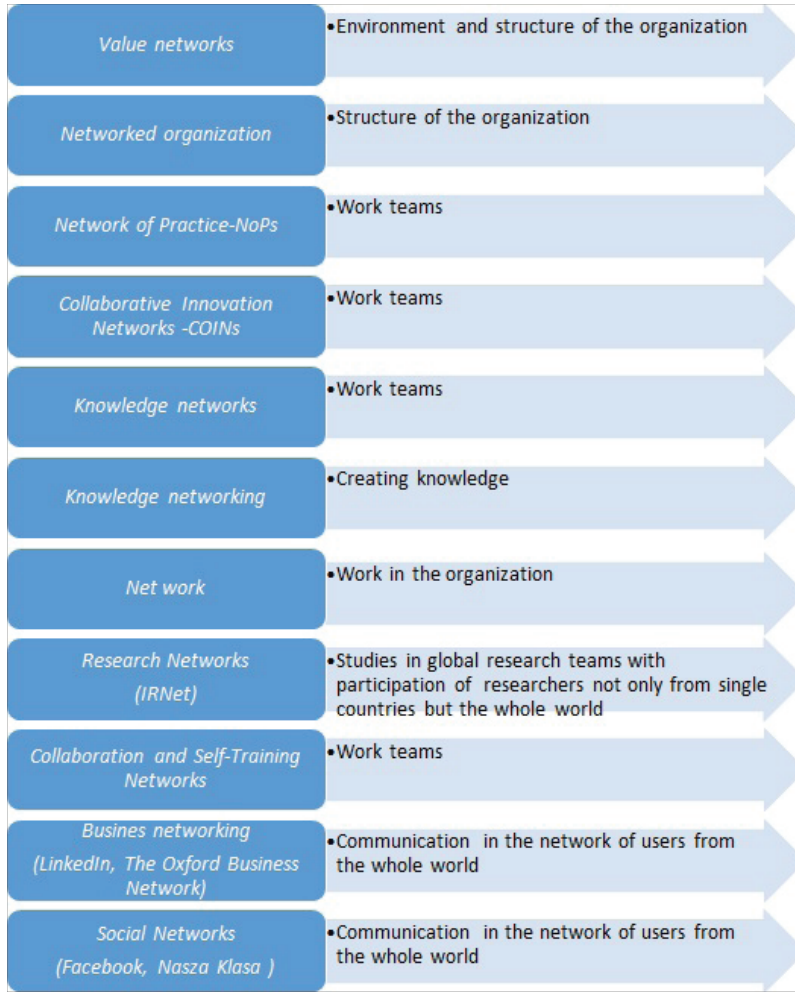

Figure 1. Some examples of notions referring to the metaphor of the net and networking (notion and aspect)

S o u r c e: Own elaboration on the basis of Paweł Stępka, Konrad Subda, Wykorzystanie analizy sieci społecznych (SNA) do budowy organizacji opartej na wiedzy /Application of SNA in building an organization based on knowledge/, E-mentor No 1 (28)/2009.

The ideas of networking are used e.g. by social portals – however, this is most visibly manifested by business networking, understood as a net of lasting *business* relations. Cherishing the contacts, entering relations with the broadest circle of entrepreneurs representing different branches enhances effective exchange of information and the kindness-based climate of business. This can be exemplified by *LinkedIn* or *The Oxford Business Network.*

The following are some examples of research networks: ResearchGate, SEEN (*SE European Bird Migration Network*), Scientific Network MSN at the Institute of Economic Sciences of the Polish Academy of Sciences, Public Administration & Local Government Research Network. The activity of research networks is discussed in the further part of the article – the case of the international research network IRNet is presented.

There are well-functioning network programmes in the EU (*CEEPUS, Visegrad, Erasmus Student Network*). However, they are not a subject of this study.

What is compliant with the logic of networking are the initiatives of the Ministry of National Education, which has suggested some new solutions in the field of teacher training.

Collaboration and Self-training Networks

The studies on educational systems and the factors which determine their effectiveness conducted by McKinsey&Company indicate that the most efficient systems promote, among other things, the decentralization of the process of teacher training. This takes place through creating small teacher groups, in which people exchange experience, observe each other's work, provide feedback, elaborate new ideas and solve educational problems. Owing to this, they can react quickly and efficiently to the new challenges in the frequently changing reality (Mourshed et al., 2012).

As the authors mentioned above have predicted, what will change in the information society are the forms of work organization and social life patterns – this will result from the decentralization and popularization of "telework" done at home, flexible working hours and self-employment. The ongoing integration of work and home life, working time, leisure and private life will be of crucial significance for social or psychological bonds and relationships and for the model of life (The National Council for Radio and Television 1996).

According to M. Hajdukiewicz, a collaboration and self-training network is a team of about 20 teachers or head-teachers from various schools or kindergartens who cooperate in an organized way. In the author's opinion, such a team should aim at sharing knowledge and skills, acquiring new competencies, fulfilling the tasks

together, team searching for the ways of handling problems, establishing contacts, and in consequence – undertaking collaboration (Hajdukiewicz, 2012).

Collaboration and self-training networks constitute a new formula of teachers' cooperation. They enhance the exchange of experiences, new solutions and competencies. They involve activities based on partnership and mutuality. As Danuta Elsner claims, a network is a group of people who want to act together in the way specified by themselves for the implementation of an aim determined by themselves as well or an aim which can be modified or changed at any time (Elsner, 2013, p. 48).

The organizational and legal foundations are provided by the following regulations.

- *Rozporządzenie Ministra Edukacji Narodowej w sprawie placówek doskonalenia nauczycieli /The Directive of the Minister of National Education on teacher training institutions/* (Journal of Laws 2012 item 1196). These regulations indicate that, among obligatory public tasks of training centres of national reach run by the minister responsible for education, there is the support for public training institutions, psychological-pedagogical consultation centres (including specialists centres), pedagogical libraries and teachers-methodology consultants, in organizing and conducting a collaboration and self-training network for teachers and head-teachers.
- *Rozporządzenie Ministra Edukacji Narodowej w sprawie szczegółowych zasad działania publicznych poradni psychologiczno-pedagogicznych, w tym publicznych poradni specjalistycznych /The Directive of the Minister of National Education on detailed regulations for the activity of psychological-pedagogical centres, including public specialist centres/* (Dz.U 2013 poz. 199 /Journal of Laws 2013, item 199/). The centres fulfil their tasks mostly by providing support for teachers, tutors of educational groups and specialists. This is mostly done in the form of organizing and conducting a collaboration and self-training network for teachers, tutors, educational groups and specialists who cooperate in an organized way in order to improve their work, especially by exchange of experiences.
- *Rozporządzenie Ministra Edukacji Narodowej w sprawie szczegółowych zasad działania publicznych bibliotek pedagogicznych / The Directive of the Minister of National Education on detailed regulations for the activity of public pedagogical libraries/* (Dz.U. 2013 poz. 369 /Journal of Laws 2013 item 369). The tasks of a library concern organizing and conducting support. The support consists in organizing and conducting a collaboration and self-training network for teachers who cooperate in an organized way in order to improve their work, especially by the exchange of experiences.

The burden of organizing a new system of teacher training should be shared by the three institutions mentioned above.

What is worth indicating here are the regulations concerning the standards of education preparing for the teacher's profession. The directive imposes the

following requirements on teachers: a teacher can independently acquire knowledge and develop professional skills associated with pedagogical (didactic, educational and care-related) activity, making use of different sources (in Polish and in foreign languages) and modern technologies. In the field of information technology, a teacher has basic knowledge and skills concerning information techniques, text processing, use of spreadsheets, use of databases, application of presentation graphics, using information network services, obtaining and processing information, as well as the skill of diversified use of information technology in pedagogical work (Dz.U. 2012 poz. 131 /Journal of Laws 2012 item 131/).

This can be exemplified by the network https://www.doskonaleniewsieci.pl/. This Internet platform is a tool prepared for the implementation of teachers' support and the support for schools. It came into being within the project of the European Social Fund entitled "The system of teacher training based on complex support for schools." The access to the platform is provided by the Centre for Development of Education for all the institutions of the educational system in order to implement the activities which are free of charge and are aimed at increasing the quality of work of Polish schools and kindergartens. The website of the project provides information on the aims, assumptions and activities within the project (http://www.ore.edu.pl/wspieranie, http://www.doskonaleniewsieci.pl).

The general goals of a network presented in Figure 2.

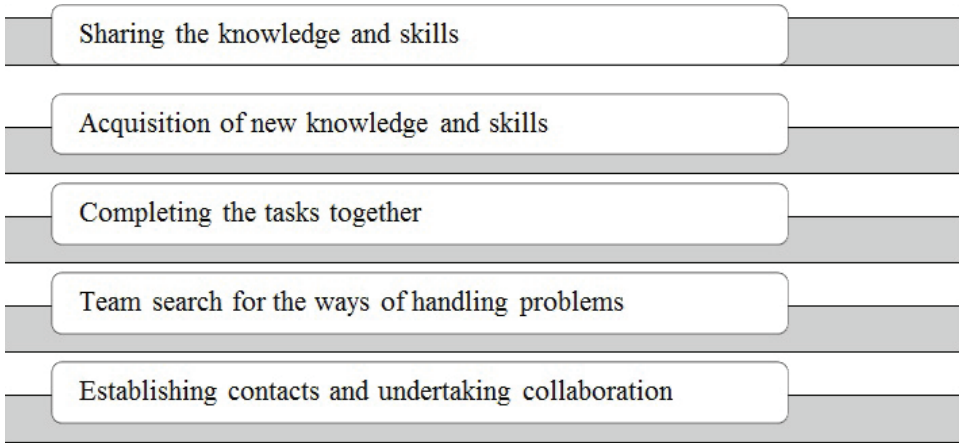

Figure 2. The general goals of a network *"Doskonalenie w sieci /Improvement in the Net/"*

S o u r c e: https://www.doskonaleniewsieci.pl/.

2013–2015 was a period of unceasing development and improvement of the platform so that it could be more efficient in achieving its goals. The intra-mail and the fora allow for communication of 20 thousand users within the platform. All of them, irrespectively of their role, have access to the information and news-

letters published on the platform as well as to the designing and participation in asynchronous trainings, conducting and reading blogs, sharing files – several thousands of various materials, publications, articles, etc. The results concerning the effectiveness of the network will be presented in the author's next publications.

Research Methodology

What is presented below are the diagnosis results of the project "Innowacyjny system wspomagania szkół w powiecie cieszyńskim /*An innovative system of school support in Cieszyn County*/." The analyses were conducted from March to August 2014 – the period in which the project functioned. The organization of the research involved participant observation, interviews with coordinators, talks with network users. This was supported by the analysis of documents and written recordings on www.doskonaleniewsieci.pl. The applied technique was a diagnostic poll.

The research comprised all teachers who took active part in the networks within the pilot project. Two networks were selected for analysis "Praca z nowoczesnymi technologiami /*Work with modern technologies/*" and "Jak radzić sobie ze szkolną absencją */How to handle school absence/*." Both networks involved 20 teachers and the work of each net was managed by a coordinator. What took place were four meetings of all participants, three meetings with an expert, one online conference. For diagnostic reasons, an electronic questionnaire was conducted with the help of the portal www.doskonaleniewsieci.pl. The results were aimed at potential alterations in the network organization.

Research Results

The studies were carried out in order to learn the opinions on the implementation of particular project tasks and the project itself. The obtained information was to facilitate the introduction of possible changes in the project. The detailed research results have been presented in the publication "Szkoła wobec wyzwań współczesności. Sieci współpracy i samokształcenia /*School in the face of contemporary challenges. Collaboration and self-training networks*/".

The types of expectations were divided into three parts according to self-assessment of competencies. 8 people obtained low scores (1–2), which constitutes 21%, 14 people obtained average scores (3) – 38%, and 15 people got high scores

(4–5) – 42% (Figure 3). It was easily noticed that the needs and expectations concerning the network are also differentiated due to self-evaluation. What seems surprising is that in the highest score group (5 points) three people out of seven expect qualifications and certificates. With no doubt, this is not what the assumptions of the network provide. In the group of low self-evaluation (2 points) the same is expected only by one person. What draws attention is the frequently mentioned problem of school absence. It is indicated by 8 people, who signal the necessity of practical solutions, which conforms their understanding of the essence of network.

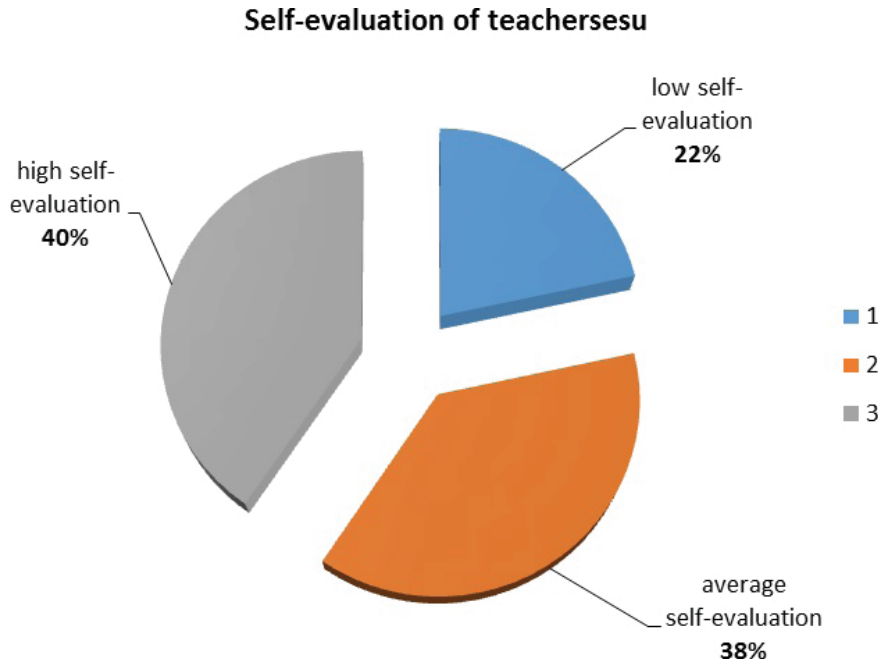

Figure 3. Self-evaluation of teachers

S o u r c e: Own elaboration.

The analysis of needs diagnosis. The largest group (Mo=3) assesses their competencies in networking as medium. The medium value (Me=3) divided the group into two parts – there are as many observations above as there are below it.

Even though participation in the project was imposed on a large number, teachers point at the advantages of taking part in the network. They claim that such cooperation enhances their competencies and provides chances for contacts with other teachers. They emphasize the integration of the teaching environment and possibilities of an exchange of experiences. What is also stressed is that their skills concerning the subject matter of the network are raised and the participation allows for viewing the discussed issues from a different perspective. What should

be also highlighted is a good atmosphere which facilitates an exchange of views and experiences.

At the same time, the observation confirms very low awareness of the project aims and of the essence of networking. The participants did not fully understand what they took part in. There was no sufficient information on the project. Teachers often mistook notions, expected certificates or other written confirmations – something quite different from what the project assumed.

What seems to be a drawback is the hurry in which the project was implemented and the fact that the participants were often randomly selected. The imposed subject matter was not interesting for some teachers, either. Moreover, it was constantly emphasized that teachers are overburdened with various training. Headteachers force them to take part in many projects, therefore it is hard to find time for content-oriented preparation to classes.

As a conclusion, it should be recognized that networks constitute an educational form with a lot of potentialities. The requirements comprised in the provided legal acts will necessitate (from institutions and teachers) the use of this form of training. However, implementing it requires time, an information campaign, and appropriate preparation and attitude of the participants.

Undoubtedly, the Polish school education needs changes. The application of information technologies is aimed at improving the quality of training and reducing the bureaucratic barriers. However, rather a gloomy picture emerges from teachers' narrations: "Thinking and teaching are the last things for which there is space in schools today. We mostly fulfil the assumption, we plan reports and report plans, we manage the risk and finances, protect personal data, maintain the bureaucratic machine" (Gadacz, 2015).

Another practical example of a network is the research network IRNet (www.irnet.us.edu.pl), in which one of the authors of this article takes active part as its coordinator.

International Research Network IRNet

Developing and implementation of the system designed to develop IT competencies of contemporary specialists, in particular future teachers, current teachers, leaders, based on the systematic use of selected Internet technologies, such as some LCMS systems (e.g. Moodle), Massive Open Online Courses, "virtual classroom" technology, social media, other selected Web 2.0 and Web 3.0 technology, positively contributes to the development of IT skills and intercultural competencies. *IRNet – International Research Network for study and development of new tools and methods for advanced pedagogical science in the field of ICT*

instruments, e-learning and intercultural competences (www.irnet.us.edu.pl) is a project financed by the European Commission under the 7th Framework Programme, within the Marie Curie Actions International Research Staff Exchange Scheme. Grant Agreement No: PIRSES-GA-2013-612536. Duration of the project: 48 months1/01/2014 – 31/12/2017. The conceptual model of the IRNet project is presented in Figure 4.

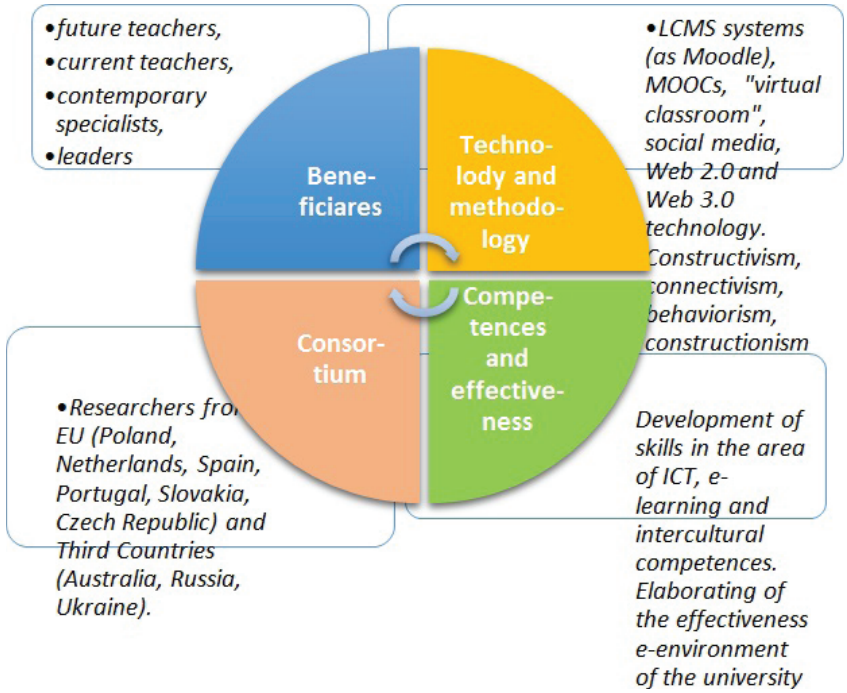

Figure 4. The conceptual model of the IRNet project

S o u r c e: Own elaboration.

The IRNet project aims to set up a thematic multidisciplinary joint exchange programme dedicated to research and development of new tools for advanced pedagogical science in the field of ICT instruments, distance learning and intercultural competencies in the EU (Poland, the Netherlands, Spain, Portugal, Slovakia) and Third Countries (Australia, Russia, Ukraine). The programme will strengthen the existing collaboration and establish new scientific contacts through mutual secondments of researchers. The main objectives of the project are: 1. to exchange expertise and knowledge in the field of innovative techniques of education between EU and Third Countries and to suggest effective strategies of implementing new tools in the educational profession; 2. to analyse and evaluate social, economic, legal conditions, as well as methodologies and e-learning techniques being developed in the European and Third Countries involved.

The project implementation is divided into seven work packages WP1-WP7. Each work package has a specified title (Figure 5) and contains *objectives, tasks, deliverables and eight months duration.*

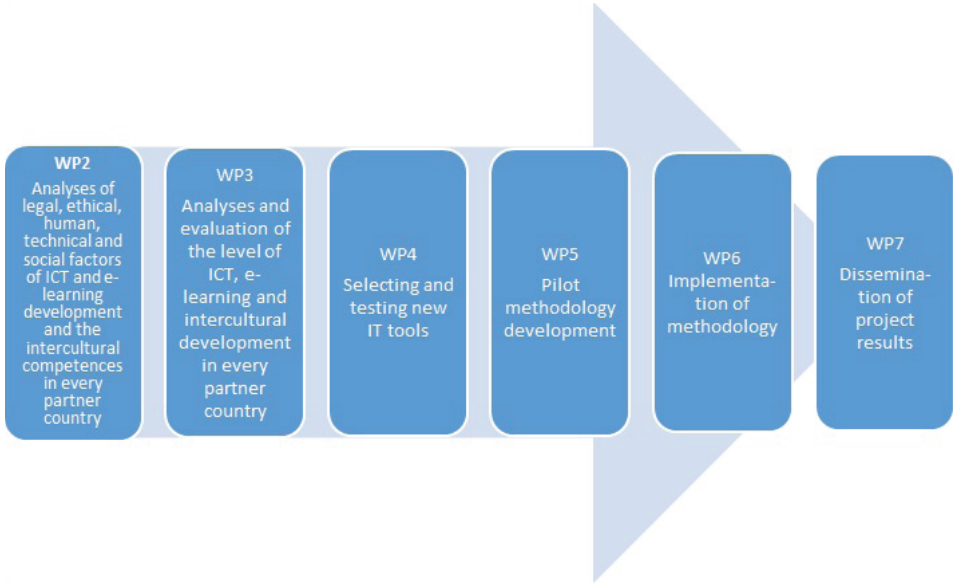

Figure 5. Work packages structure

Source: Own elaboration.

Methods of pedagogical research include:

- quantitative: (a) pedagogical monograph (research papers), (b) method of individual cases, and (c) method of diagnostic survey.
- qualitative: (a) depth interview, (b) qualitative analysis of the text (documents), and (c) observation.

TECHNIQUES OF EDUCATIONAL RESEARCH are: (a) observation, (b) interview, (c) questionnaire, (d) study and analysis of documents, and (e) content analysis.

THE MAIN RESEARCH TOOLS are: (a) interview questionnaire, (b) questionnaire, (c) survey (Google Drive, LimeSurvey), (d) observation tools, and (e) development of the subject dictionary, etc.

Among more important activities of International Research Network are secondments and research trips of researchers from European countries to third countries and from third countries to European countries, research trip and visiting a partner university, discussions during meetings, (video)conferences, seminars, workshops, in remote mode as well as on project website (www.irnet.us.edu.pl, Figure 6), Facebook (https://www.facebook.com/IRNet-1669593856645370/, Figure 7) and Twitter (https://twitter.com/irnet_project).

Figure 6. IRNet project website

S o u r c e: www.irnet.us.edu.pl.

IRNet project website contains such categories as Partners, Work Packages, News& Events, Deliverables, Dissemination, IRSES Document, Gallery (more than 100 Photo Reportage), Forum, Contact, which are permanently updated.

Project profiles on Facebook and Twitter show all more interesting and important project events, thus promoting and disseminating all activities of the International Research Network.

The more detailed concept and results of WP2, WP3, WP4 have been described in more than 100 publications of the researchers, participants of the research network and IRNet project (Smyrnova-Trybulska, 2014; Smyrnova-Trybulska et al., 2014, 2015; Kommers et al., 2014, 2015; Noskova et al., 2015), other (http://www.irnet.us.edu.pl/tools/deliverables).

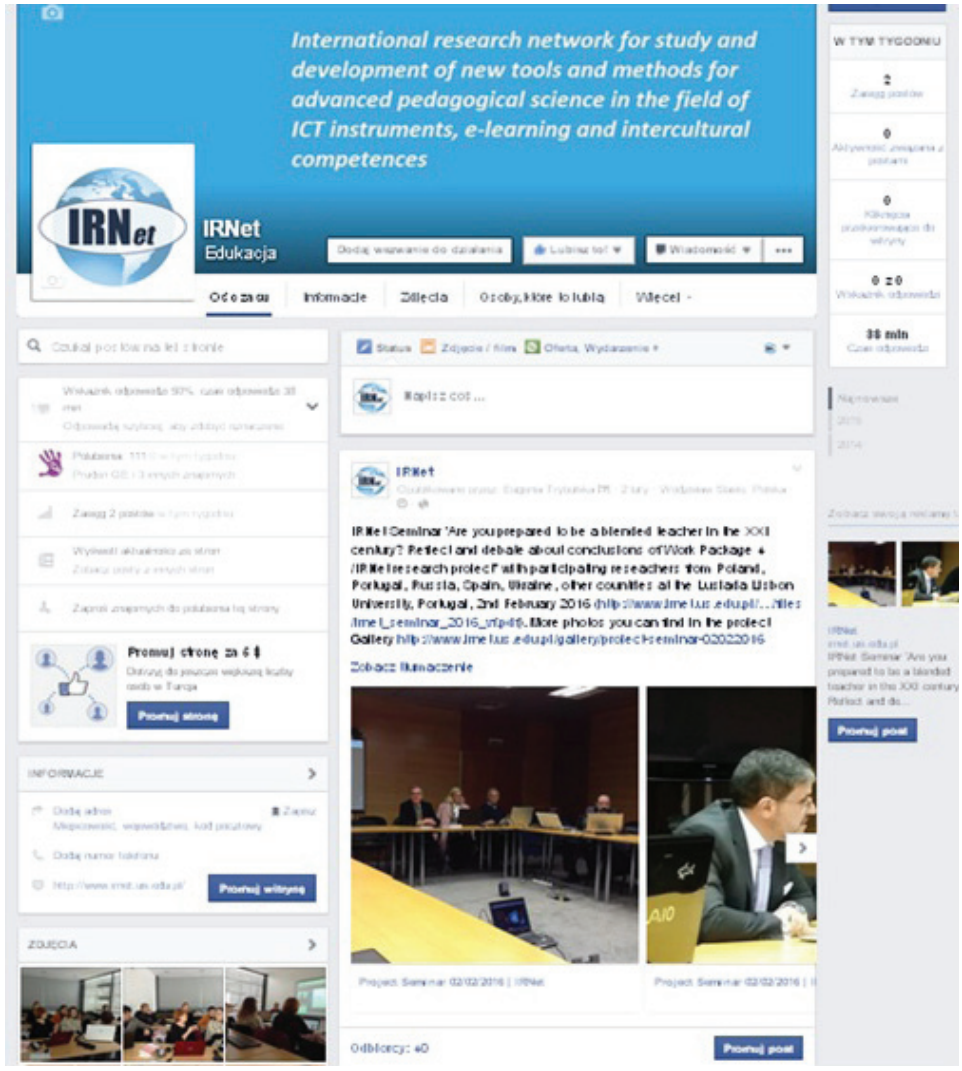

Figure 7. IRNet project profile on Facebook

S o u r c e: https://www.facebook.com/IRNet-1669593856645370/.

Conclusions

What has been analysed in this study are a few theoretical and practical determinants of the functioning of some selected categories of network; furthermore, some information has been presented on the activity of a collaboration and self-

training network and the international research network IRNet. The authors have undertaken an attempt at exploring a number of goals, aspects, factors and expected results of the functioning of certain network categories and they have specified many further steps of research activity.

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Eugenia Smyrnova-Trybulska, Przemysław Żebrok

Praca w sieci.
Analiza wybranych aspektów zastosowań

S t r e s z c z e n i e

W społeczeństwie informacyjnym zmieniają się tradycyjne sposoby komunikacji, często na rzecz form cyfrowych. Zmieniają się również formy nauczania i kształcenia, które są zastępowane zdalnym nauczaniem za pośrednictwem różnego typu sieci. Artykuł ten skupia się na teoretycznych i praktycznych czynnikach warunkujących funkcjonowanie sieci. Przeanalizowano w nim pewne wyzwania związane z Internetem w kontekście nowych perspektyw informacyjnej przestrzeni edukacyjnej opartej na globalnej sieci internetowej. Przedstawione zostały definicje oraz pewne przykładowe rodzaje sieci. Skupiono się na sieci służącej współpracy i na sieci służącej samokształceniu oraz na ich celach. Jako przykłady przedstawiono dwa przypadki: platformę internetową i sieć „Doskonalenie w sieci / Improvement in the Net" oraz międzynarodową sieć badawczą IRNet, w działalności której autorzy zaprezentowanego artykułu biorą aktywny udział.

S ł o w a k l u c z o w e: edukacja, sieci, nauczanie, ICT (TIK)

Eugenia Smyrnova-Trybulska, Przemysław Żebrok

Сети.
Некоторые аспекты применения в образовании

А н н о т а ц и я

В информационном обществе существующие традиционные способы коммуникации меняются, часто в пользу цифровых форм. Также трансформируются формы обучения и воспитания, которые замещаются дистанционным образованием с использованием сетей различных типов. Исследование фокусируется на теоретических и практических факторах, определяющих функционирование сети. В этом исследовании некоторые электронные проблемы были проанализированы в контексте новых перспектив информационно-образовательного пространства на основе глобальной сети Интернет. Были представлены определения, а также некоторые примерные типы сетей. Сотрудничество и самообучение в сети и ее цели были в центре внимания. Два случая были предоставлены в качестве примеров – платформа Интернет и сеть «Улучшение сети» и международная исследовательская сеть IRNet, в деятельности которой авторы представленной статьи принимают активное участие.

К л ю ч е в ы е с л о в а: образование, сети, обучение, ИКТ

Eugenia Smyrnova-Trybulska, Przemysław Żebrok

Red de trabajo.
Análisis de aspectos seleccionados

R e s u m e n

En la sociedad de la información, las formas tradicionales de información están cambiando mayormente a favor de los dispositivos digitales. Además, las formas de enseñanza y educación también están transformándose, siendo substituidas por la educación a distancia con el uso de varios tipos de redes. El estudio se centra en los factores teóricos y prácticos de la función de la red. En este estudio, algunos retos tecnológicos han sido analizados en el contexto de las nuevas expectativas del espacio informativo-educacional basado en la red global de internet. Las definiciones fueron presentadas además de algunos tipos de modelos de red en la red de colaboración y auto-entrenamiento y sus objetivos. Se dieron dos casos como ejemplos – la plataforma de internet y la red "Doskonalenie w sieci/ Mejora en la red/" la red de investigación internacional IRNET, actividad en la cual participaron en gran medida los autores de este presente artículo.

P a l a b r a s c l a v e: Educación, redes, enseñanza, ICT, red de investigación internacional